The motorcycling community had begun to prefer a motorcycle with speed rather than one with style. Style had always been the signature of Harley-Davidson. The designers wondered how they could create a motorcycle that possessed superior speed without sacrificing the style of a Harley-Davidson. In order to do this, a styling team and a design team worked together in order to maximize both the style and the performance of the final product. To begin, the design team worked on the shape of the engine. In order to have premium speed, the engine needed to be powerful. The original design of the engine did not fit the mold of how they wanted to style the rest of the motorcycle. The motorcycle was taken to Porsche for the optimization of the engine because of Porsche’s expertise in the field of designing and maximizing the output of engines. In order to get the engine to fit within the motorcycle, the designers created a dual frame system rather than the traditional single frame. By creating this dual frame, the powerful engine was able to fit into the skeleton frame of the motorcycle and the team was able to move on to the next step. Another problem that they encountered was the shaping of frame. The team wanted to minimize the number of welds that were made on the frame. They executed a process called hydroforming and they were able shape the dual frame into the best possible shape for the engine.

After more than a year, the team had their first prototype ready. The team encountered more problems that included the shaping of the exhaust pipe, the material of the gas tank, and the risk of the radiator overheating. The exhaust pipe was split into two to make a dual pipe at the ends while the pipes came together in the middle in order to minimize the noise output. In addition, the gas tank was formed by plastic because plastic is easily molded into a shape that fits within the overall design. Perhaps the most critical problem was the radiator. This was the first radiator in a Harley-Davidson motorcycle and it was found that the tires blocked air flow to the radiator. In order to combat this problem, dual cooling fans were inserted into the motorcycle. The motorcycle is now ready for extensive testing.

After four years of developing prototypes, the testing had begun. The motorcycle performed well on various field tests including bumping, control, and durability. In addition, it was blasted with water in order to determine if there were any short circuits. The engine was
modified in order to meet noise regulation requirements and for it to “sound” like a Harley. Tests for overheating were conducted when the Harley was ridden around and left in idle mode to ensure it would not overheat. The Dusseldorf test was conducted by running the motorcycle for a long period of time in order to test the durability of the engine. Harley-Davidson has a cult following that desires customizable style on their motorcycles. The styling team that worked hand in hand with the design team ensured that various parts could be interchangeable and customizable with what certain riders would want on their own personal motorcycles.

Throughout the design process, many more problems were encountered and the team was forced to backtrack many times. The process seemed more like a spiral rather than a straight line. At last they were ready to name the revolutionary bike. Many of the names they liked were already trademarked by other companies. The team settled on the name V-Rod because of the unique “v shaped” design of the engine and framing while combined with the colloquial name of the “hot rod” dragsters who ride Harley-Davidsons. Finally the V-Rod was completed after six years of extensive work and was ready to be revealed to public.